**We would like to know more about your program. Please answer the following questions as succinctly as possible.**

**Describe how the program, service or activity aligns with TE’s Global Philanthropic Guidelines**

ECG Robotics, Inc. FIRST Robotics Teams (FRC Team 1533-Triple Strange, FTC Team 731- Wannabee Strange and FTC Team 6183-Thunderducks) program aligns specifically with TE’s Global Philanthropic Guidelines of fostering innovation through investments in education, with emphasis on math, science, and engineering. Our mission is to inspire young people to be science and technology leaders by engaging them in mentor-based programs that build science, engineering, and technology skills, support innovation, and foster well-rounded life capabilities including self-confidence, communication, and leadership.

Our students participate in the FIRST (For Inspiration and Recognition of Science and Technology) FIRST Tech Challenge (FTC) and FIRST Robotics Competition (FRC) programs, which are fun, yet competitive programs that embrace the ideas of gracious professionalism and coopertition. In addition to building robots, we share the excitement of science, technology, engineering, and mathematics throughout Guilford County, NC, with year-round outreach events and community service. Along the route of building a successful competition robot and reaching out to the community, students gain vital skills in leadership, business, teamwork, and communication.

**Briefly describe the program, service, or activity for which you are requesting funds, how much you are requesting, and your planned delivery, including goals and activities.**

ECG Robotics, Inc. FRC Team 1533 and 2 FTC Teams had 48 members from 7 different schools in the Greensboro, NC area for the 2011 - 2012 season. We currently have 43 registered students from 10 schools for the 2012 – 2013 season. Each team designs and produces one robot for separate competitions through the FIRST program (www.usfirst.org).

FIRST Tech Challenge (FTC) is a program of US FIRST that teaches problem solving, strategic robot design, teamwork, and engineering skills. It is a less intensive program than the signature “FIRST Robotics Competition”, but is also more accessible because of its lower costs. “Table top” sized Robots are built with kits and a typical team of 10 students can be fully supported with a budget of approximately $1500, instead of $10,000 to $40,000 for a FIRST Robotics Competition team.

The key goal of these teams is getting high school students excited about science and technology to help address the pending shortage of engineers and scientists. Hands-on experience in designing a robot to compete in a game provides first-hand knowledge to students. They strategize what their robot should do to be successful in the game, design, build, program, test, and ultimately compete with their robot.

We are requesting $4000:

* a  $3000 - FRC Team 1533 FIRST Registration Fees (partial funding)
* b  $1000 – FLL Registration Fees and equipment to start new FLL team at Hope  Academy

1. FRC Team 1533 plans to attend two competitions this year, the NC Regional Competition (14 - 16 March 2012) and the Cincinnati, OH Regional (21 - 23 March 2013). Registration fees for both tournaments total $9000.

* a  The Cincinnati Regional is the nearest regional competition scheduled during 70% of our students’ Spring Break in March 2013.
* b  NC Regional – many students miss 1 or 2 days of school to attend our home state tournament. We have attended the first three NC Regional tournaments, a fantastic event at the NC Fairgrounds. NC State University helps facilitate the tournament and hosts the Friday evening social event at the new NC State Engineering facilities.
* 2. Request $1000 to start a new FLL Team at Hope Academy.
* $275 - FLL Registration for 1 year $699 - FLL Robot Set and Game Challenge Set-Up $ 26 - Estimated shipping/taxes (partial)
* Four of our students and two parents have started an FLL afterschool activity at Hope Academy in the Glenwood area of Greensboro, NC. The school opened August 2012 with the mission to educate, encourage and equip at-risk youth in order to transform their future. Our students intended to register and start an FLL Team this year, but with the school just opening, it wasn't until the beginning of October that they were able to put the logistics in place to start meeting with the students. This was too late to register for FIRST's FLL program. Instead, our FTC Teams and one of the families provided 2 NXT Mindstorm kits, and LEGOs. The students have met for 5 weeks so far, for 2 hours each Wednesday afternoon, to learn, get familiar, and experiment with the Mindstorm kit. The students have committed to mentoring the students at Hope Academy for the entire school year, with the intent to start an official FLL Team next fall.
* We have not requested funds from any other organization for these budget items.

**Briefly describe the need for the program, service or activity you propose to provide, and how many people you expect to reach. What documentation can you provide that your program is needed?**

* In the 21st century, science and technology have become the most important factors in bringing about significant changes in the global environment. Developments in these fields now dominate organizations’ and countries’ abilities to solve global challenges and be leaders in the world economy. Unfortunately, students in America are falling gravely behind in science and math fields. Many documented studies show that American students are academically behind our international counterparts. In lasy year Program for International Student Assessment, US students ranked 15th to 25th place in science, reading, and math. Our domestic students scored mostly in the bottom quarter out of all tested, well below the international average. Locally, in Guilford County, according to information provided in the Guilford Education Alliance’s (GEA) Education Matters in Guilford County: Measuring Community and School Success – Fall 2010, about 30% of Grade 10 students did not make Academic Yearly Progress in both Math and Reading (page 19). Additionally, Guilford County SAT Test Takers (All Students) have performed below the national average for the past 4 years of data (page 21). FIRST Robotics provides an interactive and exciting program to give students a push towards success in math and science.
* The Hope Academy, located in the Glenwood area of Greensboro for which we are requesting $1000 to start an FLL Team, provided the following information.

Schools in the Glenwood area are performing significantly below the rest of Guilford County Schools and the NC state average. Of the Glenwood students enrolled in the Glenwood Tutoring Program:

* ·  0% passed the 5th grade EOG in science. (EOG - End of Grade exam)
* ·  25% passed the EOG in language arts.
* ·  50% passed the EOG in math.
* ·  75% are at least one or more grade levels behind in reading.
* ·  83% of all the Glenwood Tutoring students failed at least one EOG.  Here are some of the ways poverty affects the children of Glenwood:
* ·  95% live on public assistance and qualify for free or reduced lunch.
* ·  92% live in single–parent homes.
* ·  95% know someone currently incarcerated.
* ·  90% have heard gunshots on their streets.
* ·  85% have never been to Friendly Shopping Center or visited UNCG which is across Lee Street from the neighborhood.
  1. ·  For many, no one in their family graduated from high school.
  2. ·  In the past year, 6 students have been taken into the foster care system.
  3. ·  The majority of the children in our programs are in the second to third generation of poverty.  No other program provides as clear a combination of teamwork, design, engineering, and public service as FIRST does. Students share their enthusiasm through outreach presentations to encourage other students to get involved in science. In the past two years, ECG Robotics FTC and FRC students participated in outreach events that included demonstrating their robots at elementary and middle schools, a college fair sponsored by RFMD, the Greensboro Grasshoppers baseball game, afterschool programs, the NC A&T FTC Competition (FRC Team members displayed the FRC Robot), NCTA - North Carolina Technology Association - Annual Leadership Conference (a very big deal with representatives from all of the major tech companies in NC present), the Women’s Presidents Organization, The Guilford Education Alliance Education Summit, the grand opening of the new science wing at the Museum of Natural Sciences in Raleigh, and many others.  Additionally, this year our students realized they have a talent for conducting workshops that consists of describing a 'game challenge', leading small groups in brainstorming sessions, and then demonstrating our team's robots and often letting students drive the robot. Our students conducted the following workshops since April 2012:
* ●  General Greene Elementary School Technology Fair, 400 students - 8 - 45 minute workshops
* ●  NC Center for Afterschool Programs Statewide Youth STEM Summit at the North Carolina Museum of Natural Sciences in Raleigh, 200 students, 3 - 1 hour workshops
* ●  Primrose Elementary School - 200 students, 4 - 1 hour workshops
* ●  Univ North Carolina- Greensboro, Girls Incorporated Summit, 90 Students, 3 - 1 hour  workshops

It is difficult to quantify the number of people our program reaches. We know our program directly immerses our student team members each year in a hands-on exploration unlike any other. Through both Teams’ outreach and community service efforts, we estimate we reached over 7000 people just this year through direct contact, and many more through media releases:

* ●  40 - 50 (14 - 18 yrs) high-school aged children are members of ECG Robotics, Inc. - These high-school students represent 10 high schools (our largest this 2012-2013 year) located in Guilford County. We welcome any and all students who want to participate.
* ●  400 - (11 - 14 yrs.) middle-school aged children, who attend team robot demonstrations at robotics competitions
* ●  400 - (5 - 10 yrs) elementary-school aged children, who attend robot demonstrations at their school
* ●  60 - (8 - 10 yrs) elementary-school aged children - our team members volunteer to help with their homework and provide LEGO enrichment activities at afterschool program.
* ●  200 - (5 - 10 yrs) elementary school aged children - our team members volunteer at the Greensboro Natural Science Center assisting with the LEGO Robotics Summer Camps.
* ●  20 - (11 - 14 yrs) Middle school aged children - Our team members volunteer as mentors to FIRST LEGO League Robotics Teams.
* ●  20 - (14 - 18 yrs) High School aged children - members of other community robotics teams that our students collaborate with during the robot build season.
* ●  2000 - Student and families attending our Greensboro Grasshoppers Baseball game demonstration. Our team robot threw the first pitch.
* ●  3000 - Students and families that attended the NC Museum of Natural Sciences 24 Hour Grand Gala Opening
* ●  2000 - adults - Grocery Store robot demonstrations asking customers to link their customer card to support our program. Our students linked over 450 customer cards.
* ●  ECG Robotics supports the FIRST ideal of bringing together alliances of business leaders, educators, mentors, volunteers, and technology organizations to motivate young people about the benefits, rewards, and excitement of careers in STEM.  FIRST released the results in September 2011 of the Cross-Program Evaluation of the FIRST Tech Challenge and the FIRST Robotics Competition Executive Summary. The study was prepared by the Center for Youth and Communities, Heller School for Social Policy and Management, Brandeis University. Their main finding is that, “a large majority of participants and team leaders in both FTC and FRC report gains on key outcomes, including a better understanding of the use of science and technology in the real world; increased interest in STEM (Science, Technology, Engineering, and Math) and STEM-related careers; increased interest in school success and college-going; and gains in a number of 21st Century life and workplace skills (critical thinking, problem-solving, communications, teamwork, etc.).“ More details are available at: http://www.usfirst.org/aboutus/impact.  We have included the following information in previous grant requests to TE Connectivity because it is specific to FIRST.



A study funded by the Ford Foundation and completed by Brandeis University in 2005 looked at a sample of 300 FIRST Robotics Competition participants and compared them to non-FIRST participants with similar preparation in mathematics and science. The sample was drawn from among FIRST teams in New York City and the Detroit area. It was found that FIRST participants:

☼ Went on to college at a higher rate (89% vs., 65%) than recent high school graduates ☼ Were nearly twice as likely to major in science or engineering (55% vs. 28%) ☼ Were more than three times as likely to major specifically in engineering (41% vs. 13%) ☼ Were significantly more likely to aspire to a post-graduate degree (77% vs. 63%) ☼ Were more than twice as likely to expect to have a science or technology-related career (45% vs. 20%) ☼ Were more than twice as likely to have done community service in the past year (71% vs. 30%)

Additional information is available from this link to the executive summary of the Brandeis University Study. http://www.usfirst.org/uploadedFiles/Who/Impact/Brandeis\_Studies/FRC\_eval\_execsum.pdf .

ECG Robotics, Inc. relies on the national FIRST organization’s measurements of the impact of this program and believes these results are indicative of our students. Locally, our program’s impact is difficult to measure. Much of the impact may not be recognized for years to come. However, we believe that involving students in this program, having them demonstrate their robots to various audiences from young children to business members to educators, spending time with young children, and sharing their enthusiasm is a positive investment in the future.

**Will you be collaborating with other organizations or agencies on this program? Who are your collaborators, and how will this be accomplished?**

Like most FIRST teams, we rely heavily on family and community support and the support of companies like TE Connectivity for facility use, tool and machine shop access, mentors, and funding. Our mentors represent a variety of community partners, corporations, and organizations. Our mentors come from ABCO Automation, Macord Mason, TE Connectivity, General Dynamics, RFMD, Wake Forest University Health Science, UNC-Greensboro, NC A&T, Thomas Built Buses, Machine Solutions, QMF Solutions, Guilford Technical Community College, and The Early College at Guilford. We have several mentors who have been with our team for eight years. Our mentors enable our students’ success in this FIRST project by bringing their experience, patience, and willingness to share their time and passion for science and technology.

US FIRST, a national not-for-profit organization, provides the game, robot kit and technical support and guidance for each team. Last year, several more local companies supported our team, including ITT, Machine Solutions, Thomas Built Buses, and QMF Solutions. We have two new mentors who engaged with our team from the Guilford Technical Community College (GTCC), ICET (Industrial, Construction, and Engineering Technologies) Division, and are looking forward to a shared partnership that provides student access to tools and technology. Additionally, these mentors have brought new students from the GTCC Middle College High School to our program.

**List the estimated cost of the program and your projected budget. Give the sources of funding that are both committed and proposed.**

ECG Robotics, Inc. budget for 2012-2013 is included as an attachment to this application. This includes our budgeted income and expenses of $43,600 for both our FTC program (approximately $2600) and our FRC program (approximately $41,000). The following paragraphs are specific to our FRC program, which we are requesting funds for.

Budgeted expenses for 2012-2013 allocates for approximately $41,000. Budget Expenses include: Admin Expenses (Insurance, Supplies, & Rent & Utilities ($8500)): $9100, Awards Banquet & Recognition: $400, Competition Costs (Registration Ohio and NC Regional): $9000, Competition Travel: $11,000, Marketing (T-Shirts, printing, team spirit, website): $2000, Outreach & Community Service: $1000, Fundraising Expenses (LED Lightbulb Purchase): $2000, Robot Development (Robot parts, Field Elements, tools, supplies): $6500, and 2 FTC Teams: $2600.

Our Rent & Utilities expense of $8500 represents 20% of our total budget, and is a substantial cost that warrants an explanation. Throughout our FRC Team 1533’s 9 year history, several places have hosted our robot build activities, but only during build season. We’ve built robots at NC A&T University, at one of our sponsor’s facility located in Browns Summit (a 30 – 60 minute commute each way for students), at a local moose lodge, and at a parents warehouse that has since been sold. We are grateful for all our community sponsors support, but each place presented many challenges to include liability issues, access, transportation, commuting, to name just a few. October 2010, we made the financial commitment ($600/month plus utilities and internet) and leased a 1700 square foot open room in a business park, centrally located in Guilford County. This has greatly enabled our team to meet at times conducive to student schedules, made this experience more accessible for students, and provided the opportunity for students to meet weekly throughout the entire year, including summer. For the last two years students have met weekly spending their non-competition-build time designing, building, and maintaining our demonstration robots, volunteering and demonstrating their robots at many community outreach events. Additionally, our 2 FIRST Tech Challenge (FTC) Teams also meet at our build space. We welcome other teams to share our space, and have previously held mechanical engineering and CAD training with other Guilford County robotics teams at our facility and mentored 3 other FTC teams at our facility. Having our own build space has enriched our students FIRST experiences in numerous ways to include stronger relationships amongst the students and mentors because of the additional time spent together doing FIRST related activities.

Budgeted Income includes from Grants and Donations: $25,300, Member Dues: $3000, Fundraising: $4800, and Member Trip Fees: $10,500. Students and families are responsible for a portion of our team costs, predominately travel costs and a portion of other expenses, through member dues and team fundraisers such as selling FIRST - 7 Watt LED Light Bulbs. Students and parents are responsible for just over 40% of team expenses, and we seek sponsors to underwrite almost 60% of our costs.

**How will you evaluate the success of your program?**

2012 – 2013 is the ninth year that ECG Robotics team will participate in FIRST Robotics. Success for our team is defined by our learning experiences and the knowledge we gain from problem solving, creating designs, working as a team, learning to make decisions as a group, developing and continuously fostering relationships with our sponsors and mentors, reaching out to our community and sharing our excitement about science and technology.

Our FRC Team 1533 hopes to be able to continue many of the successes we have had both in competition and in the community. Last season (2011 – 2012), we attended two regional tournaments. In 2012 Team 1533 was an alliance captain and made it to the semi-finals at the Pittsburgh Regional. Over the years, we have received several awards including the Regional Judges Award (2009 & 2007, 2006), the Regional Engineering Inspiration Award (2008), and the Woodie Flowers Award (2011).

We seek increased interest in science and technology and dedication to their studies among the students involved. We see enthusiasm when they share what they learned with other students, and in the choices alumni make for college. In 2010, we had 9 graduates, all of whom went to 4-year colleges. 3 are majoring in science or engineering, 3 in political science, 1 in psychology, and 2 were undetermined. In 2011 we had 7 students and 2012 we had 13 students graduate as seniors, all with plans to attend 4 year colleges and all 20 indicating they will study engineering or science.

More specifically, success for us in 2013 will be to compete with gracious professionalism in two FRC Regional Competitions, including our home state NC’s Regional Competition, and the FTC Aggieland Competition at NC A&T in Greensboro, NC and for our team to continue building a future where students are enthusiastic about science, math, and technology in our local community.